

Economic Impact Analysis
on
Variance and Exemption Rulemaking

The attached economic impact analysis of today's proposed rule was performed by the Cadmus Group, private contractor to the U.S. Environmental Protection Agency (USEPA). The analysis was used to examine the economic impact of variance and exemption regulations on public water systems, State drinking water programs, and USEPA. The results of this analysis were then used to help USEPA provide consideration to relevant Executive Orders and Acts, such as Executive Order 12866, the Small Business Regulatory Enforcement Fairness Act, and the Unfunded Mandates Reform Act, among others. The analysis attached provides the reader with results of the analysis, as well as constants, assumptions, and variables that were incorporated into the analysis. For a more detailed discussion of the economic impact analysis, see the preamble to today's proposed regulations, Part IV.

Summary Table: Full Approval for Variances and Exemptions

Costs

Affected Entity	Annualized Burden Increase (FTE)	Annualized Costs (dollars)
EPA	3.36	\$241,821
SDWP	60.60	\$5,041,694
PWS	7.25	\$348,716
The public	None observed	\$0
TOTAL	71.21	\$5,632,231

Benefits

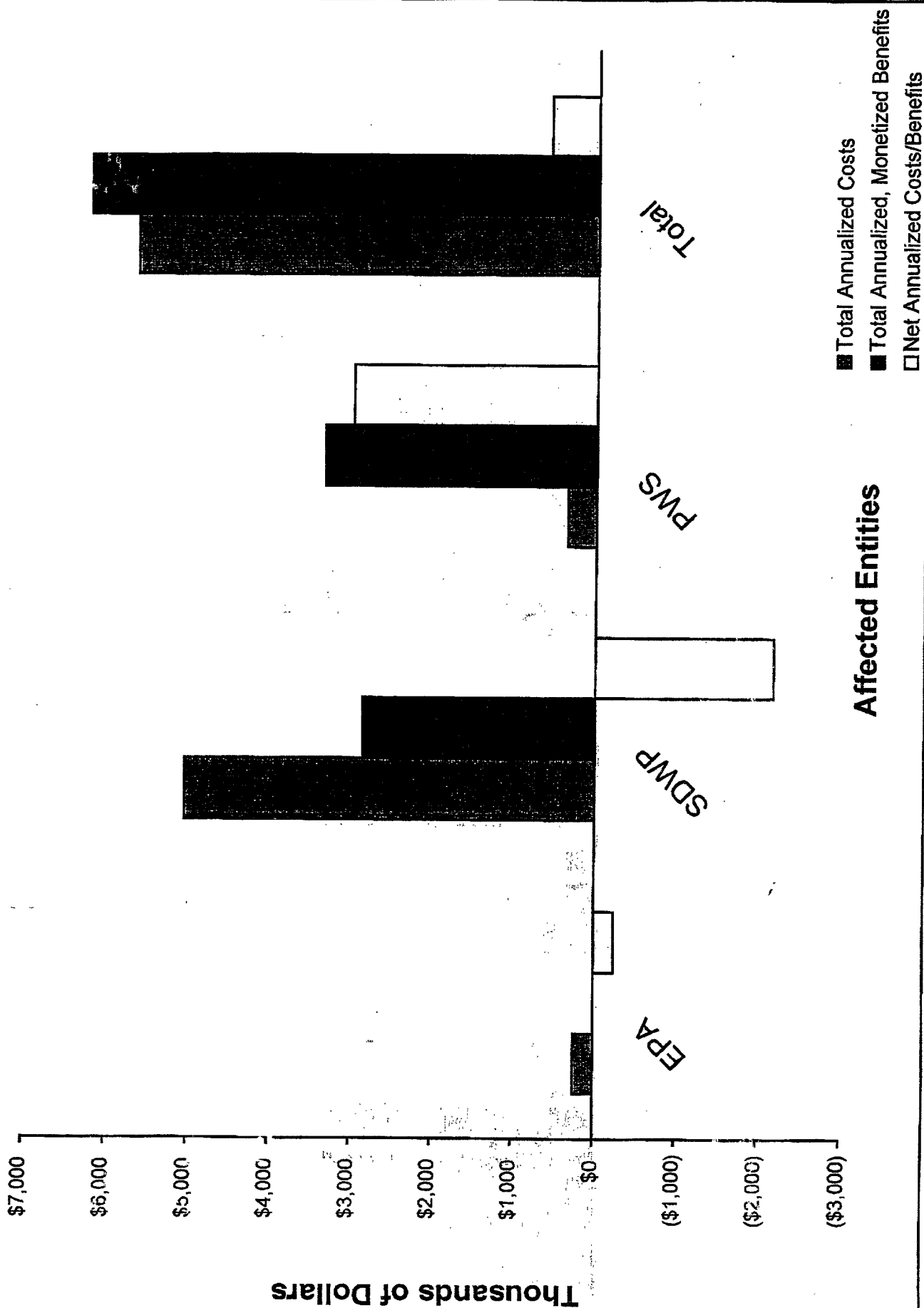
Affected Entity	Annualized Burden Reduction (FTE)	Annualized Monetized Benefits (dollars)
EPA	None observed	\$0
SDWP	34.87	\$2,863,321
PWS	30.36	\$3,342,616
The public	Improved health	Improved health
TOTAL	65.23	\$6,205,937

Net Annualized Monetized Costs/Benefits:	(5.98) FTE and	\$573,706
Present Discounted Value of Monetized Benefits for the Proposed Variance and Exemption Rule:		\$3,999,476

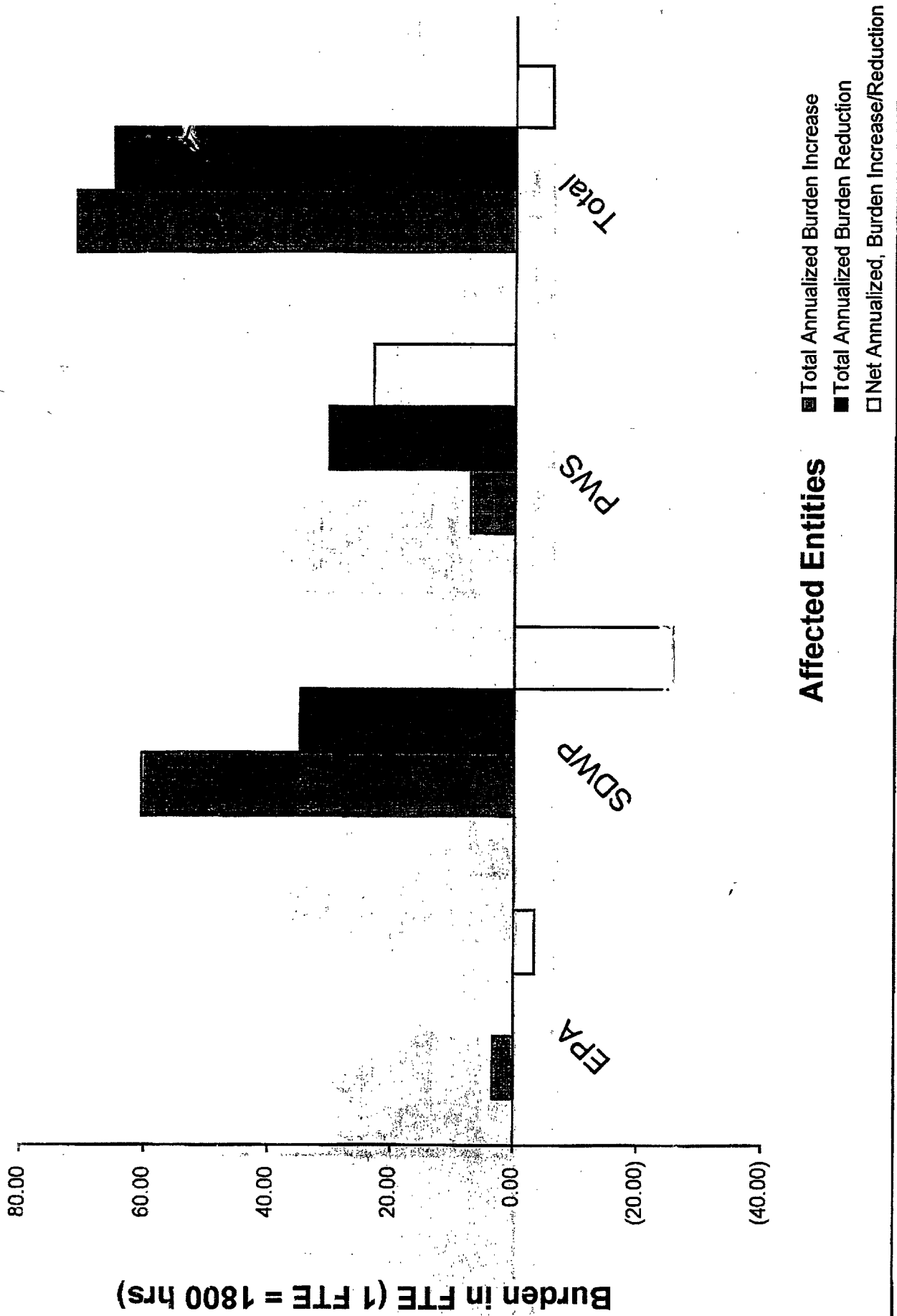
Key Assumptions:

	Lead and Copper Rule	Phase II/IV Rule
Systems eligible to apply for variances or exemptions	100%	100%
Eligible systems that will apply for variances	0%	30%
Eligible systems that will apply for exemptions	90%	60%
Systems that apply for a variance that will be granted one	100%	100%
Systems that apply for an exemption that will be granted one	100%	100%

Full Approval for Variances and Exemptions: All Systems



Full Approval for Variances and Exemptions: All Systems



Variance and Exemption Rulemaking

I. Assumptions

A. Affected Entities

EPA
State drinking water programs
Public water systems (PWS)
Customers of PWS (the public)

B. Time Frame

Variances: all systems	3 years to install variance technology (plus a 2 year grace period)	Reviewed every 5 years after compliance with variance technology
Exemptions: systems < 3,301	Initially 3 years in duration	May reapply for up to three 2 year extensions
Exemptions: systems 3,300 - 10,000	3 years in duration	No extensions granted

Model time frame	Costs annualized over 9 years
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C. Constants and Assumptions

System Size	All PWS Subject to the Lead and Copper Rule - Purchased Water Systems Included	All PWS Subject to the Phase II/IV Rule
25-500	51,191	48,100
501-3,300	16,902	14,126
Total < 3,301	68,093	62,226
3,301-10,000	4,323	3,410
Total < 10,000	72,416	65,636
> 10,000	3,529	2,774
Total	75,945	68,410

	Percentage of All PWS Subject to Rule	
	Lead and Copper	Phase II/IV
TT or MCL violators (annual violation rate)	0.50%	0.50%
TT or MCL violators (nine-year violation rate)	4.50%	2.00%
TT or MCL violators that are issued a notice of violation	100%	100%
Recipients of a notice of violation that are placed under an administrative order, subject to a compliance schedule	50%	100%
Systems subject to an administrative order that fail to abide by their compliance schedule and are taken to court by the State	2%	2%

Number of States and equivalents (D.C., Guam, etc.)	56
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Full-time equivalent (FTE)	1,300 hours
Number of hours used to derive an hourly rate from an annual salary	2,080 hours

Overhead rate -- EPA	21.8%
Overhead rate -- Private law firm	150.0%

Labor rate for EPA employees (overhead included)	\$72,000 per year	\$34.62 per hour
Labor rate for State employees (overhead included)	\$83,200 per year	\$40.00 per hour
Labor rate for State attorneys (overhead included)	\$83,200 per year	\$40.00 per hour
Labor rate for expert witnesses (overhead included)	\$156,000 per year	\$75.00 per hour
Labor rate for PWS < 3,301 (overhead included)	\$30,160 per year	\$14.50 per hour
Labor rate for PWS > 3,300 (overhead included)	\$58,240 per year	\$28.00 per hour

General Schedule Salaries:	Low end	High end	*** No overhead included ***
GS-9	\$30,257	\$39,338	
GS-10	\$33,320	\$43,319	
GS-11	\$36,609	\$47,589	
GS-12	\$43,876	\$57,043	
GS-13	\$52,176	\$67,827	
GS-14	\$61,656	\$80,151	
GS-15	\$72,525	\$94,287	

Median Base Associate Salary (Firms of 2-25 attorneys):	Overhead Not Included	Overhead Included
1st year	\$45,000	\$112,500
2nd year	\$49,750	\$124,375
3rd year	\$50,910	\$127,275
4th year	\$57,300	\$143,250
5th year	\$60,000	\$150,000
6th year	\$67,500	\$168,750
7th year	\$71,500	\$178,750

D. Key Driving Assumptions

	Lead and Copper Rule	Phase II/IV Rule
MCL and TT violators that are eligible for variances or exemptions	100%	100%
Eligible systems that will apply for a variance	0%	30%
Eligible systems that will apply for an exemption	90%	60%
Eligible systems that will apply for neither a variance nor an exemption	10%	10%
Base rate for variances approval as a percentage of applications	100%	100%
Base rate for exemption approval as a percentage of applications	100%	100%
Variances continued after review as a percentage of variances granted	100%	100%
Systems that have received an exemption that will apply for a continuance of their exemption	100%	100%
Second exemptions granted as a percentage of systems applying for their first continuance	100%	100%
Third exemption granted as a percentage of systems applying for a second continuance	100%	100%
Fourth exemption granted as a percentage of systems applying for a third continuance	100%	100%

Time spent by State to evaluate each variance application:	40 hours
Time spent by State to evaluate each initial exemption application:	40 hours
Time spent by State to evaluate each subsequent exemption application:	20 hours

Additional percentage of systems for which alternative paths to compliance will be found:	10%	for every -->
	4	hours above 12 spent evaluating each application

PWS customer will object to:	20% of variances
PWS customer will object to:	15% of exemptions
Administrator will object to:	40% of variances
Administrator will object to:	10% of exemptions

PWS will appeal:	30% of judgements
Collection action will be necessary for:	75% of awarded civil penalties
Civil penalties collected from:	10% of systems < 10,000
Civil penalties collected from:	60% of systems > 10,000
Civil penalty as a result of a complete judicial proceeding for systems < 10,000:	\$5,000 per settlement
Civil penalty as a result of a complete judicial proceeding for systems > 10,000:	\$50,000 per settlement

Number of States assumed to be abusing their power to grant variances and exemptions:	5
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Systems < 3,301 that have the financial capacity to complete a financial self-analysis and a variance or an exemption application:	50%
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Discount rate -- cost of capital:	7%
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E. Variance and Exemption Output Tables

Variances	Lead and Copper		Phase II/V	
	Percent of Systems	Number of Systems	Percent of Systems	Number of Systems
Systems < 3,301 that are eligible for a variance -- i.e., systems < 3,301 in violation of MCL or TT	4.50%	3,064	2.00%	1,245
Eligible systems < 3,301 that will apply for a variance	0%	0	30%	373
Systems < 3,301 that will be granted a variance	30%	0	30%	112
Systems < 3,301 that will have their variance continued after review	100%	0	100%	112
Systems 3,300-10,000 that are eligible for a variance -- i.e., systems 3,300-10,000 in violation of MCL or TT	4.50%	195	2.00%	68
Eligible systems 3,300-10,000 that will apply for variance	0%	0	30%	20
Systems 3,300-10,000 that will be granted a variance	30%	0	30%	6
Systems 3,300-10,000 that will have their variance continued after review	100%	0	100%	6
Systems > 10,000 that are eligible for a variance -- i.e., systems > 10,000 in violation of MCL or TT	4.50%	159	2.00%	55
Eligible systems > 10,000 that will apply for a variance	0%	0	30%	17
Systems > 10,000 that will be granted a variance	30%	0	30%	5
Systems > 10,000 that will have their variance continued after review	100%	0	100%	5

Exemptions	Lead and Copper		Phase II/V	
	Percent of Systems	Number of Systems	Percent of Systems	Number of Systems
Systems < 3,301 that are eligible for an exemption -- i.e., systems < 3,301 in violation of MCL or TT	4.50%	3,064	2.00%	1,245
Eligible systems < 3,301 that will apply for an exemption	90%	2,758	60%	747
Systems < 3,301 that will be granted an exemption	30%	827	30%	224
Systems < 3,301 that will be eligible for a second exemption	100%	827	100%	224
Eligible systems < 3,301 that will apply for a second exemption	100%	827	100%	224
Systems < 3,301 that will be granted a second exemption	80%	662	80%	179
Systems < 3,301 that will be eligible for a third exemption	100%	662	100%	179
Eligible systems < 3,301 that will apply for a third exemption	100%	662	100%	179
Systems < 3,301 that will be granted a third exemption	80%	529	80%	143
Systems < 3,301 that will be eligible for a fourth exemption	100%	529	100%	143
Eligible systems < 3,301 that will apply for a fourth exemption	100%	529	100%	143
Systems < 3,301 that will be granted a fourth exemption	80%	424	80%	115
Systems 3,300-10,000 that are eligible for an exemption -- i.e., systems 3,300-10,000 in violation of MCL or TT	4.50%	195	2.00%	68
Eligible systems 3,300-10,000 that will apply for an exemption	90%	175	60%	41
System 3,300-10,000 that will be granted an exemption	30%	53	30%	12

II. Costs

	Time Necessary to Complete Task	FTE	Annual Wage Rate	Annualized Line-item Cost	Coefficient used to Annualize Line-item Cost
A. EPA					
Review and process all variances for systems 3,300-10,000 that meet requirements	12 hrs/sys	0.02	\$72,000	\$1,091	0.11
Construct a compliance schedule for those systems 3,300-10,000 that applied for a variance for which an alternative path to compliance was found	12 hrs/sys	0.01	\$72,000	\$764	0.11
Develop and issue a compliance schedule for systems 3,300-10,000 granted a variance	12 hrs/sys	0.00	\$72,000	\$327	0.11
Review and process all variances for systems > 10,000 that meet requirements	8 hrs/sys	0.01	\$72,000	\$592	0.11
Construct a compliance schedule for those systems > 10,000 that applied for a variance for which an alternative path to compliance was found	8 hrs/sys	0.01	\$72,000	\$414	0.11
Develop and issue a compliance schedule for systems > 10,000 granted a variance	8 hrs/sys	0.00	\$72,000	\$178	0.11
Respond to any petition filed by a consumer and determine whether to object to a variance	24 hrs/sys	0.04	\$72,000	\$2,627	0.11
Notify State of reason for EPA disapproval of any variance -- include methods to address shortcomings; review revised application	16 hrs/sys	0.05	\$72,000	\$3,503	0.11
Review and process all exemptions for systems > 3,300 that meet requirements	12 hrs/sys	0.16	\$72,000	\$11,520	0.11
Construct a compliance schedule for those systems > 3,300 that applied for an exemption for which an alternative path to compliance was found	12 hrs/sys	0.13	\$72,000	\$9,373	0.11
Develop and issue a compliance schedule for systems 3,300-10,000 granted an exemption	12 hrs/sys	0.05	\$72,000	\$3,456	0.11
Respond to any petition filed by a consumer and determine whether to object to an exemption	24 hrs/sys	1.43	\$72,000	\$102,811	0.11
Notify State of reason for EPA disapproval of any exemption -- include methods to address shortcomings; review revised application	16 hrs/sys	0.31	\$72,000	\$22,531	0.11

	Time Necessary to Complete Task	FTE	Annual Wage Rate	Annualized Line-item Cost	Coefficient used to Annualize Line-item Cost
A. EPA (continued)					
Periodically review the state programs	40 hrs/state	0.41	\$72,000	\$29,867	0.33
Notify State programs if they are abusing their power to grant variances or exemptions or if they have not issued a compliance schedule for a variance; annul inappropriate variances and create revised compliance schedules	80 hrs/state	0.07	\$72,000	\$5,280	0.33
Review affordability criteria every five years	60 hrs	0.01	\$72,000	\$480	0.20
Review approved variance technologies every seven years	1000 hrs	0.08	\$72,000	\$5,714	0.14
Staff training -- rule specific	80 hrs/FTE	0.01	\$72,000	\$990	0.11
Supervision	.1 FTE/FTE	0.28	\$72,000	\$20,152	1.00
Clerical support	.1 FTE/FTE	0.28	\$72,000	\$20,152	1.00
Total Annualized Costs for EPA		3.36		\$241,821	

	Time Necessary to Complete Task	FTE	Annual Wage Rate	Annualized Line-item Cost	Coefficient used to Annualize Line-item Cost
B. State Drinking Water Program					
Regulation adoption and program development for new rule	1 FTE/state	6.22	\$83,200	\$517,689	0.11
Evaluate variance application	40 hrs/sys	1.01	\$83,200	\$84,322	0.11
Evaluate initial exemption application	40 hrs/sys	9.19	\$83,200	\$764,306	0.11
Evaluate ensuing exemption applications	20 hrs/sys	3.17	\$83,200	\$263,495	0.11
Complete financial analysis of system for a variance for those systems < 3,301 that cannot complete one themselves	10 hrs/sys	0.12	\$83,200	\$9,587	0.11
Assist those systems < 3,301 to complete variance application that cannot complete one themselves	18 hrs/sys	0.21	\$83,200	\$17,257	0.11
Construct a compliance schedule for those systems < 3,301 that applied for a variance for which an alternative path to compliance was found	24 hrs/sys	0.39	\$83,200	\$32,214	0.11

	Time Necessary to Complete Task	FTE	Annual Wage Rate	Annualized Line-item Cost	Coefficient used to Annualize Line-item Cost
B. State Drinking Water Program (continued)					
Write terms and conditions of Small System Variance (SSV) to ensure enforceability. The SSV will include a compliance schedule with intermediate milestones, a requirement for monitoring and reporting, and an implementation schedule for additional control measures required by the State for each variance granted to systems < 3,301	24 hrs/sys	0.17	\$83,200	\$13,806	0.11
Notify Administrator of all proposed variances for PWS – submit all variances for systems 3,300-10,000 and > 10,000 to Administrator for review and approval	1 hr/sys	0.01	\$83,200	\$766	0.11
Respond to any objection by the Administrator to granting a variance to a water system	24 hrs/sys	0.07	\$83,200	\$5,522	0.11
Provide public notice and public hearing for the people served by the system before issuing a variance	24 hrs/sys	0.18	\$83,200	\$15,178	0.11
Enforce compliance schedules and report violations of a milestone or any other term or condition of the variance to the Administrator for each variance granted	6 hrs/sys	0.36	\$83,200	\$30,356	0.89
File management for variances	.5 hrs/sys	0.03	\$83,200	\$2,846	1.00
Reexamine variances every five years to ensure adequate protection of human health	12 hr/sys	0.16	\$83,200	\$13,660	0.20
Complete financial analysis of system for an exemption for those systems < 3,301 that cannot complete one themselves	10 hrs/sys	1.87	\$83,200	\$155,865	0.11
Assist systems < 3,301 to complete exemption application that cannot complete one themselves	18 hrs/sys	3.37	\$83,200	\$280,558	0.11
Construct a compliance schedule for those systems < 3,301 that applied for an exemption for which an alternative path to compliance was found	24 hrs/sys	4.39	\$83,200	\$365,610	0.11
Develop and issue a compliance schedule with intermediate milestones, a requirement for monitoring and reporting, and an implementation schedule for additional control measures required by the State for each exemption granted to systems < 3,301	24 hrs/sys	4.60	\$83,200	\$382,543	0.11
Notify Administrator of all proposed exemptions for systems < 3,301	1 hr/sys	0.16	\$83,200	\$13,041	0.09
Respond to any objection by the Administrator to granting an exemption to a water system	24 hrs/sys	0.46	\$83,200	\$38,254	0.11

	Time Necessary to Complete Task	FTE	Annual Wage Rate	Annualized Line-item Cost	Coefficient used to Annualize Line-item Cost
B. State Drinking Water Program (continued)					
Provide public notice and public hearing for the people served by the system before issuing an initial exemption	24 hrs/sys	1.65	\$83,200	\$137,575	0.11
Enforce compliance schedules and report violations of a milestone or any other term or condition of the exemption to the Administrator for each exemption granted	6 hrs/sys	2.76	\$83,200	\$229,659	1.00
File management for exemptions	.5 hrs/sys	0.23	\$83,200	\$19,138	1.00
Prepare quarterly violations and exemptions report	.1 FTE/state	5.60	\$83,200	\$465,920	1.00
Staff training -- rule-specific	80 hrs/FTE	0.23	\$83,200	\$19,058	0.11
Management (program manager, data manager)	.1 FTE/FTE	4.66	\$83,200	\$387,823	1.00
Supervision	.1 FTE/FTE	4.66	\$83,200	\$387,823	1.00
Clerical Support	.1 FTE/FTE	4.66	\$83,200	\$387,823	1.00
Total Annualized Costs for All SDWP		60.60		\$5,041,694	

	Time Necessary to Complete Task	FTE	Annual Wage Rate	Annualized Line-item Cost	Coefficient used to Annualize Line-item Cost
C. Public Water Systems (PWS)					
Complete application form and submit any additional information required by the state for variance with help from the State (some systems < 3,301)	3 hr/sys	0.03	\$30,150	\$1,043	0.11
Notify all persons served by the water system of the water system's intent to submit an application for a variance (< 3,301)	2 hr/sys	0.05	\$30,160	\$1,390	0.11
Complete financial analysis of system for a variance if system can	10 hrs/sys	0.14	\$58,240	\$8,045	0.11
Complete application form and submit any additional information required by the state for variance if system can without help from State	24 hrs/sys	0.33	\$58,240	\$19,308	0.11

	Time Necessary to Complete Task	FTE	Annual Wage Rate	Annualized Line-item Cost	Coefficient used to Annualize Line-item Cost
C. Public Water Systems (PWS) (continued)					
Notify all persons served by the water system of the water system's intent to submit an application for a variance (> 3,300)	2 hr/sys	0.00	\$58,240	\$231	0.11
Complete application form and submit any additional information required by the state for an initial exemption with help from the State (some systems < 3,301)	3 hrs/sys	0.32	\$30,160	\$9,787	0.11
Complete application form and submit any additional information required by the state for an extension to an exemption with help from the State (some systems < 3,301)	1.5 hrs/sys	0.12	\$30,160	\$3,582	0.11
Notify all persons served by the water system of the water system's intent to submit an application for an exemption (< 3,301)	2 hr/sys	0.75	\$30,160	\$22,600	0.11
Complete financial analysis of system for an initial exemption if system can	10 hrs/sys	1.21	\$58,240	\$70,759	0.11
Complete application form and submit any additional information required by the state for exemption without help from the State	24 hrs/sys	2.92	\$58,240	\$169,823	0.11
Complete financial analysis of system for an extension to an exemption if system can	5 hrs/sys	0.40	\$30,160	\$11,940	0.11
Complete application form and submit any additional information required by the state for extension to an exemption if system can	12 hrs/sys	0.95	\$30,160	\$28,655	0.11
Notify all persons served by the water system of the water system's intent to submit an application for an exemption (> 3,300)	2 hr/sys	0.03	\$58,240	\$1,553	0.11
Total Annualized Costs for All PWS		7.25		\$348,716	
Total Annualized Costs for All Affected Entities					
		71.21		\$5,632,231	

II. Benefits (Avoided Costs):

A. Public Health Benefits

*** See qualitative discussion ***

	Time Necessary to Complete Task	FTE	Annual Wage Rate	Annualized Line-item Cost	Coefficient used to Annualize Line-item Cost
B. Enforcement and Litigation Costs Avoided by the States					
1. Notices of Violation Avoided					
Processing notices of violation	10 hr/sys	0.70	\$72,000	\$50,101	0.11
2. Administrative Orders and Compliance Schedules Avoided					
Processing administrative orders	20 hr/sys	3.29	\$72,000	\$236,845	0.11
Completing compliance schedules		*** Not avoided ***			
3. Judicial referrals avoided					
State attorney and paralegal assistance	1.5 FTE/state	25.20	\$83,200	\$2,096,640	0.33
Technical staff – regional engineer (compliance, permitting, regulatory inspector time)	340 hrs/sys	1.12	\$83,200	\$93,054	0.11
Court fees	140 hrs/sys	0.46	\$83,200	\$38,316	0.11
(Filing, court reporter, and transcript fees)	24 hrs/sys	0.08	\$156,000	\$12,316	0.11
Witness expenses (expert and otherwise)					
Total cost of appeals	One-half the cost of trial	4.03		\$336,049	
Collection action for delinquent payments	2 hrs/sys	0.00	\$83,200	\$411	0.11
Civil fines no longer collected (< 10,000)	\$5,000/sys			(\$2,942)	0.11
Civil fines no longer collected (> 10,000)	\$50,000/sys			\$0	0.11
Total Annualized Legal Costs Avoided by All SDWP		34.87		\$2,863,321	

	Time Necessary to Complete Task	FTE	Annual Wage Rate	Annualized Line-item Cost	Coefficient used to Annualize Line-item Cost
C. Legislation and Fines Avoided by all PWS					
1. Judicial referrals avoided					
Attorney and paralegal assistance	1.5 FTE/state	25.20	\$112,500	\$2,835,000	0.33
Technical staff for systems < 3,301	200 hrs/sys	0.62	\$30,160	\$18,609	0.11
Technical staff for systems > 3,300	200 hrs/sys	0.04	\$58,240	\$2,381	0.11
Court fees (Filing, court reporter, and transcript fees)	140 hrs/sys	0.46	\$83,200	\$38,316	0.11
Witness expenses (expert and otherwise)	24 hrs/sys	0.08	\$156,000	\$12,316	0.11
Total cost of appeals	One-half the cost of trial	3.96		\$435,993	
Civil fines no longer paid < 10,000	\$5,000/sys			\$2,942	0.11
Civil fines no longer paid > 10,000	\$50,000/sys			\$0	0.11
Total Annualized Legal Costs Avoided by All PWS		30.36		\$3,342,616	

Total Annualized, Monetized Benefits	65.23	\$6,205,937
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Net Annualized, Monetized Costs/Benefits Over 9 Years	(5.98)	\$573,706
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